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# REVITALIZING THE ISSUES, THEORIES AND CONCEPT OF HOUSE PRICE BUBBLES

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**ABSTRACT**

*The sharp increase in house prices in several industrialized economies such as the US, UK and Spain (Glindro, et al., 2007) has attracted much attention due to the distorted impact created by the bursting of bubbles in the economy (Gyntleberg & Remolona 2006). Governments and organizations such as the Bank of International Settlement (BIS), International Monetary Fund (IMF) and Organization for Economic Cooperation (OECD) have raised concern about the issues of asset price instability (overshooting the fundamental variables) in the housing market (Gyntleberg & Remolona, 2006). Housing bubbles are believed to be caused by the expectation of an increase in future house prices. The three price expectation theories: rational expectation hypothesis (REH), adaptive expectation hypothesis (AEH) and exogenous expectation hypothesis (EEH) are used to rationalize the behavior of people in creating housing bubbles. It is also believe that people who rejected the existence of housing bubbles follow the supply side economics theory whereas others who believe on the existence of housing price bubbles follow the Keynesians and Shiller theory and Austrian school of thought. Therefore, it is important to understand the theoretical and conceptual framework underlying housing bubbles before suggesting any monetary or fiscal policies that might prevent future housing bubbles crises.*

***Field of Research:*** *House price, bubbles, expectation hypothesis.*

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**1. Introduction**

Researchers have defined bubbles in many ways. According to Garber (1990 ) there are different terms used by economists to explain the behaviors of market-asset prices such as 'bubbles', 'tulipmania', 'chain letter', 'Ponzi scheme', 'panic', 'crash', 'herding' and 'irrational exuberance'. The common definition of a bubble is a sharp increase in an asset price in a continuous process (Kindelberger, 1987). Increased asset price is caused by an investor's expectation of a future increase in asset price (Stiglitz, 1990). This leads to the purchase of an asset in the anticipation that the asset can be resold to other people for a higher price (Blanchard & Fisher, 1989). The people who buy the asset also hold the same beliefs about the asset price (Blanchard & Fisher, 1989).

In the real estate market, bubbles occur when property values increase rapidly and reach levels that are unsustainable given the current economic condition that exist (Knight, 2002). The bubbles in housing prices start when the appreciation of house prices become irrational and does not depend on economic fundamental factors (Malpezzi & Wachter, 2005). The bubbles in housing market is also described as an unusually sharp rise (deviation) in the asset price at the extraordinary high levels from the market fundamentals (Kritayanavaj, 2008). At present, house price bubble crises are occurring frequently in most housing markets. However, today's house price bubbles differ from those of the past. To better understand the current house price bubble; let us revert to the two historical bubbles events one in Florida, US (1929) and the other in Japan (1989).

In 1920, the prosperity of the US economy allowed people to invest in property market. Due to an outstanding marketing strategy, real estate in Miami, Florida went into a 'boom' phase for several years (Allen, 1931). The causes of this 'boom' phenomenon included a desirable location, an alluring name and exotic image, thematic entrance gates, a palatial resort hotel, Mediterranean or Spanish style architecture, promotion and aggressive salesmen. According to Bordo (2005), the Florida land boom indicated a real 'displacement' stage in the Keynes-Minsky-Kindleberger model. Furthermore, the boom and burst of Florida real estate is believed to have been caused by speculative bubbles with the American middle class people saw Florida as a wonderful residential place (Galbraith, 1954). However, in spring and summer of 1926, the boom in the Florida property market ended with the busting of the bubble caused by the sinking of a Danish warship in Miami harbour and a hurricane that destroyed the Biscayne Bay projects (Allen, 1931). Theses events directly contributed to a higher cost of living in Miami. Other factors such as the oversupply of residential housing in Florida and the changes in residential investors's perceptions of the Florida economy caused residential prices to decreased and burst (Galbraith, 1954).

Cargill et al., (1996) describe the Japanese economy in 1986 as a 'bubble economy' due to higher appreciation of the Japanese yen and easy mortgage financing. After World War II, Japanese people were encouraged to save their income for the future development of their nation. The large amount of savings in Japanese banks caused the Japanese economy to 'boom' with development in the banking sector leading to cheaper financing costs, a trade surplus and a stronger yen. During this period, Japan experienced the most inflated property prices in the 20$^{th}$ Century with asset prices doubling and then tripling within few years (Cargill et al., 1996). The Japanese bubble peaked with a rumour about the higher cost of land beneath the Imperial Palace in Tokyo. The land was assumed to cost more than the state of California. By 1989, Tokyo's Giza district had recorded the highest price in Tokyo's real estate at U.S$1.5 million per square meter (Cargill et al., 1996). Asset prices in Japan finally came down in the first

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half of the 1990s as result of the declined in Japanese stock prices by 60% from 1990 to August 1992 and land prices by half from 1991 to 1995 (Cargill et al., 1996). This period is known as the bursting of the bubble economy in Japan (Cargill et al., 1996). The collapse of the Japanese economy occurred gradually as many companies, particularly in sectors related to real estate, were left with large debts. For example, a total of US$ 9 trillion was lost due to decreased property prices and a 65% decreased in property prices was recorded between 1991 and 2005 (Cargill et al., 1996).

The US subprime crisis and the historical bubbles of Florida, US and Japan have shown that the asset price bubble can grow rapidly and the cost of the bubble bursting can be extremely expensive for the economy **(**Belke & Wiedmann, 2005). Therefore, it would be of great interest for us to revitalize and reexamine the issue and theoretical concept of house price bubble in order to reduce the potential harm caused from booms to bursts of house price in the economy.
This paper is structured as follows. Section 2 lays the theoretical background on housing bubbles while section 3 briefly discusses previous studies on house price bubble. Section 4 describes the existence of house price bubble; and Section 5 concludes the paper.

## 2. Theories on housing bubbles

Thorton (2005) suggests three bubble theories, which describe the acceptance and rejection of the existence of bubbles in the housing markets. The three theories are; supply side economics theory, Keynesians and Shiller theory and Austrian school theory. These theories provide a good framework for understanding the existence of house price bubbles. However, many researchers (see Bordo, 2005; Cargill et al., 1996; Kindleberger & Minsky, 1996,) fail to predict the timing of a bubble boom or burst in the housing market and the most relevant fundamental factors, which contribute to the volatility of the housing prices.

### 2. 1. The supply side economics theory

The supply side economists and the Chicago school of economists rejected the existence of a 'bubble' in the housing market. They believed that the 'bubble' was caused by real factors (Thorton, 2006). People who believed in the increase in house prices, due to fundamental values such as higher inflation and interest rates could make a profit by selling their houses at inflated prices, and this deflates the bubble long before it ever becomes over-inflated and bursts (Thorton, 2006).

Researchers such Carliner (2002), Case and Schiller, (2003), McCarthy and Peach (2004) and Himmelberg et al., (2005) believe that the recent trend towards increasing in house prices is not caused by bubbles. Carliner (2002) explains the bubble in the US in the early 2000 was caused by the slowing down of the US job market and not by the increase in house prices in the US. Case and Schiller (2003) argue an increase in house prices does provide sufficiently strong evidence to conclude that a housing bubble exists, rather it may be caused by some other economic fundamental (Case & Schiller, 2003).
Using a price to income ratios approach for the US housing market, both McCarthy and Peach (2004) and Himmelberg et al., (2005) studies suggest that the increase in price to income ratio is caused by changes in personal income and nominal mortgage rates. In the Swedish housing market, Hort (1998)

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reveals that the mean reversion recorded in 22 cities reflects rational overshooting of equilibrium prices, which supports a rejection of the existence of bubbles in the housing market.

All of the studies above conclude that a bubble cannot occur in the housing market as suggested by supply side economics theory. However, the supply side theory suggests government interventions to reduce people's perception and miscommunication about housing bubbles (Thorton, 2006).

**2.2 The Keynesians and Shiller theory**

The second view on housing bubbles states that bubbles are caused by psychological factors. This view received a lot of support from economists including Paul Krugman and Robert Shiller. According to this view, real factors may contribute to the deviation in the business cycle but the important causal factors are psychological. When people become confident or overconfident, it will generate a boom in the economy since there is an increase in risk taking (Thorton, 2006).

Speculative behaviours are created when economic decisions are made without relying on the fundamental values. As investment mania forms rapidly in the housing market, the bubble expands and creates a housing boom (Thorton, 2006). Schiller (2008) explains that the housing boom caused by over confident and irrational exuberance, will have to burst due to the reversal of people's expectations of future house prices.

According to Brunnermeier and Julliard (2007) households fail to differentiate between real and nominal changes in interest rate and rent, and therefore make housing purchase decisions without considering future decreases in price and rent. This psychological factor causes house price to increase and creates a booming condition in the housing market. Thorton (2006) explains that investors react negatively to disappointing news in economic reports. However, investors in general believe downturn events are temporary. As prices continue to fall and investment projects are postponed, a bubble in the economy can trigger off panic among investors, resulting in a depression.

There are three important factors causing housing bubbles (see Schiller, 2004). The first factor is the increasing risk and chaos in the world market due to the technology boom and terrorist attacks of 9/11 that caused people to invest in conservative markets such as houses. In addition, Shiller (2004) sees the explosive growth in global communication contributing to the build up of bubbles in the housing markets. People are attracted to appealing pictures and news about beautiful and glamorous cities or states and tend to overspend their money (Thorton, 2006).The last factor is the psychological factor which is "the speculative contagion that underlies any bubbles" (Thorton, 2006, p.8). Shiller (2004) explains that once people form a speculation expectation on house prices in one city, this will continue to spread into other cities, creating a contagious effect in the housing market. This is consistent with Roehner (1999) who shows that speculative behaviour caused an increase in house price for other districts in the Paris housing market.

**2.3.The Austrian school**

Finally, Austrian economists believe that there are changes in real factors and market psychology during bubbles, which are driven by the business cycle. The business cycle is seen as a flow of awareness and emotions (Thorton, 2006). This theory is based on the Austrian business cycle (known as ABC) theory

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(Thorton, 2006). In this theory, the central banks create the business cycles by *driving* up the supply of money, which in turn lowers the interest rates and leads to a 'boom' situation. This bubble boom is only temporary as the misallocation of capital resources will soon be corrected and channelled towards more efficient uses through a process of 'burst' or recession (Thorton, 2006).

Thus, it has long been recognized that different people hold different expectations of housing bubbles. First, people who believe that the movement in house prices is caused by economic fundamentals (interest rates and income) reject the theory of bubble existence in the housing market. Second, people who accept the theory of bubble existence believe that the increase in house prices is caused either by psychological factors or by a buyer's expectation (i.e. whether he/she is optimistic or pessimistic about the future direction of house prices and business cycles).

**3.0 Review of literature**

The asset pricing literatures have highlighted the difficulty in explaining the existence of bubbles in the housing market (Flood & Hodrick, 1990). These include difficulty in determining fundamental variables which affect the movement of house prices (Flood & Hodrick, 1990), undeveloped models for estimating house prices (Englund et al., 1999) and arguments from other researchers about the theory and method used in explaining the existence of housing bubbles (Cho, 1996).Despite this complexity in measuring housing bubbles, many researchers have found empirical evidence to support the existence of bubbles in housing markets globally (see Abraham & Hendershott, 1992, 1994, 1996; Ayuso & Restoy, 2003; Chan et al., 2001).

Several researchers have found quite modest housing bubbles in countries such as Australia (Bourassa & Hendershott, 1995), Sweden (Hort, 1998), and New Zealand (Bourassa et al., 2001). The housing markets in London (Levin & Wright, 1999), Paris (Roehner, 1999) and Dublin (Roche, 2001) were also reported to be affected by a regional speculative behavior. Furthermore, countries such as Ireland, South Africa, Israel, Greece, Russia and China have also displayed signs of a bubble in their real estate markets since 2005.

Zhou and Sornette (2008), Goodman and Thibodeau (2008) and Abraham and Hendershott (1992, 1994) examined housing bubbles in the US. For example, Abraham and Hendershott (1992, 1994) reveal that there was a 30% above-market premium in house prices in the Northeast US and about a 15% to 20% premium in house prices on the West Coast. Abraham and Hendershott (1992) integrate two proxies in the real estate market; one for the tendency of a bubble to burst and second the tendency of a bubble to swell. These proxies were found to be working well in explaining the large cyclical swings in real estate prices on the West Coast of US (Abraham & Hendershott, 1992). Further evidence of bubbles in the US housing market is found in Las Vegas from June 1983 to March 2005. Zhou and Sornette (2008) analysed 27 Las Vegas house prices using 27 different zip codes. Defining real estate bubbles as the acceleration of prices faster than exponential, Zhou and Sornette (2008) proved the existence of bubbles in Las Vegas house prices between 2003 and mid 2004, ending in 2005. Case and Schiller (2005) support the existence of speculative bubble in some regional US housing markets. The authors' results were based on a survey of consumers' attitudes toward housing, which reported that 90% of the people in San Francisco, Boston, Milwaukee and Los Angeles expected an increase in house price in the future and

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that there was evidence of speculative bubbles in single-family house prices in these areas in 1998 and 2003.

The issue of speculative bubbles caused by speculation on the anticipated change in the future house price in UK was examined by Garino and Sarno (2004) and Zhou and Sornette (2003). Using a cointegration and Markov-regime switching model, Garino and Sarno (2004) tested the UK house price with fundamentals factors such as real personal disposable income per capita, treasury bill interest rates, mortgage rate and consumption expenditure deflator (CED) over the period 1983:Q1 to 2002:Q4. Zhou and Sornette (2003) used a mathematical equation to study the existence of bubbles in the UK residential market from December 1992 to April 2003. In both studies (Garino & Sarno, 2004: Zhou & Sornette, 2003), speculative bubbles were proved to exist in the UK housing market.

Hall et al. (1997) use a switching error correction model to examine the house price in the UK. The authors use data from Baton Rouge and Case-Schiller from 1967 to 1994 and conclude that the estimation coefficient from the error correction model shows that a boom in UK real house prices is associated with an unstable regime. Hall et al. (1997) tested for heteroskedasticity in the changes of house prices for the presence of a random walk. The result of their study proved that both data, Baton Rouge and Case-Schiller, rejected the random walk hypothesis.

Levin and Wright (1997) show that speculation is a significant factor in determining house prices in the UK from 1972 to 1994. Speculation causes volatility in house prices for London City, the South East and South West in the UK. An OECD (2005) study of international house prices in 17 international housing markets points to a 30% overvaluation in UK house prices in 2003 to 2004 as evidence of house price bubbles. The OECD result was drawn from a comparison of house price to rental ratios and the use of backward looking price expectation hypothesis in calculating the user cost of housing. The UK housing bubbles were believed to have ended in 2003 (Zhou & Sornette, 2003).

In the Paris housing market, the house price bubble started in 1994 and burst throughout 1990 to 1991 (Roehner, 1999). By examining twenty districts in Paris, Roehner (1999) described the price movement of house prices in different districts and characterized each district in terms of relative strength based on speculative trading versus supply inelasticity. The result of Roehner (1999) study points to the transmission of speculative behavior by economic agents as a significant factor in generating price increases in other districts even those with a lower income and poor housing standards.

In the Australian housing market, Hatzvi and Otto (2008) used the asset pricing theory to explain the behavior of 36 Local Government Areas (LGAs) property prices and rents in Sydney from 1991 to 2006. Using house price, income growth, population growth, building costs, mortgages rates and consumer prices, two bubbles were identified in the Sydney housing market. The property prices of LGAs in the outer western suburbs of Sydney showed a large percentage (60%) of variation, which is not explained by the variation in the fundamentals (rent growth and real interest rates). Using only housing data (without apartments), the variation in Sydney's house prices (rent ratios) is not explained by the asset pricing fundamentals. Similar conclusions are drawn by Bourassa and Hendershott (1995) and Bodman and Crosby (2004) with regards to the Australian housing market.

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Bourassa and Hendershott (1995) examine speculative bubbles in five capital states in Australia, including Canberra, using annual data of real wage growth, growth in employment, growth in real construction costs, after tax real interest rates and population growth from 1979 to 1993. The authors conclude that speculative bubbles do exist in the Australian housing market. Bodman and Crosby (2004), used Bourassa and Hendershott's (1995) model and data (add real rents, demographic and Australia GDP) and found supporting evidence that the Australian housing market experienced speculative bubbles.

In addition, studies have documented substantial evidence of the existence of bubbles in Asian and East Asia countries such as Japan, Korea, Hong Kong, China and Thailand. According to Quigley (2001), the over booming and fluctuations of real estate markets in Southeast and East Asia countries contributed to the 1997 Asian financial crisis. For example in Thailand real estate market, the existence of bubbles is believed to have caused the 1997 Asian financial crisis (Kritayanavaj, 2008). The house price index in Thailand decreased to 19.54 % during the crisis period in 1997 to 1999 (see Table 1.2).

Calhoun (2003) examines the house price indexes (HPI) in Thailand from the pre-crisis period (1992) to the post-crisis period (2000). Using a hedonic property valuation models, Calhoun (2003) found a significant regional difference in house price appreciation rates for both the pre-crisis and post-crisis period. Thirty of 76 provinces in Thailand showed negative HPI appreciation rates from 1992 to 1997 while eight other provinces showed negative HPI appreciation rates of more than 30 %. In the post-crisis period (1997 to 2000), the negative HPI appreciations are recorded in 69 of 76 provinces. Therefore, during the boom in Thailand real estate market, many provinces seemed to experience negative growth in house prices (Calhoun, 2003). This is supported by Wong (2001) who also describes the formation of bubbles in Thailand's housing market prior to the 1997 Asian financial crisis.

In regard to the Korean housing market, researchers such as Kim (2005) and Kim and Suh (1993) provide empirical evidence of the existence of bubbles. Kim (2005) uses two approaches: 1) linear regression in a time series analysis and; 2) the concept of discounted cash flow (DCF), in examining the presence of bubbles in the real estate market in Korea. The author uses interest rates, income, inflation and real GDP growth rates from 1988:Q1 to 2002:Q4 from Kookmin Bank. Using the first approach, Kim's study shows evidence of housing bubbles occurring in two periods: 1) 1991:Q1 to 1993Q4 and; 2) 2001:Q3 to 2002:Q4. In the second approach, the results indicate a greater likelihood of bubbles occurring in the Gangnam district in Seoul. This finding is consistent with the situation in Gangnam district which is the most expensive and speculative area in Seoul (Kang, 2007).

Ito and Iwaisako (1995) examined Japanese property prices in order to determine whether the variation in property prices could be attributed to the fundamental factors. Their results suggested that during the early 1980s rational explanation and fundamental factors cannot be used to explain the changes in asset price in Japan.

Chan et al. (2001) used the signal extraction approach of Durlauf and Hall (1989) to detect the unobservable model noise and the misspecification error in three urban areas of the Hong Kong property market. Evidence of the existence of a bubble caused by the misspecification error, is found in Hong Kong Island, Kowloon and New Kowloon with a bubble explosion from 1990 to 1992 and from 1995 to 1997.

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Wong (2005) found similar bubbles in the Hong Kong residential housing price. This study examine the movement between the house prices in Hong Kong with fundamental factors such as housing stock construction cost, population growth and interest rates from 1992 to 1998. Xia and Tan (2007) used a Kalman Filter on the Hong Kong property market to test for any existence of bubbles from the 1980s to the 1990s. Using a combination of fundamental variables and speculative bubbles, Kalra et al. (2000) and Peng (2002) examined the Hong Kong property price model. Their study showed that half of the movements in Hong Kong property prices were explained by fundamental variables and the other half were due to the inflating of a bubble, which follows by bubbles collapsed or bursting.
The strong growth in China's economy and rapid development in the real estate market have contributed to the increase of house prices in China (Shen at al., 2005). Qi and Li (2004) and Shen et al. (2005) have examined the Chinese real estate market to determine the possible existence of housing bubbles. Qi and Li (2004) built a model to explain the increase in China's real estate prices by examining the relationship between real estate prices and bubbles. The results of their study show that three main factors contribute to the increase of real estate prices in China and the formation of real estate bubbles. These factors include increased market demand for real estate assets, more opportunities in terms of credit from financial institutions and an oligopoly competitive market (Qi & Li, 2004).

Shen et al. (2005) examined the Beijing and Shanghai housing markets using a Granger causality test and generalized impulse response analysis. The economic fundamentals include disposable income of urban household, GDP and stock price index for both cities. The authors' result suggests that only the Shanghai housing market was found to be experiencing housing bubbles in 2003. The Shanghai housing prices deviated 22% from the market fundamentals values and this deviation can be attributed to the bubble (Shen at al., 2005).

Studies in the Swedish property market indicate that bubbles existed in the market in different periods (see Bjorkland & Sodenberg, 1999; Jonung et al., 2006; Yang & Turner, 2004). Yang and Turner (2004) examined the private housing market in Sweden from 1971 to 2001 to determine and understand the influence and characteristics of fundamental factors and bubbles. The bubble is explained by the deviation of house price from these fundamentals factors (Yang & Turner, 2004). The authors used a common trend (CT) model where the model decomposes permanent and transitory shocks into cointegration model. Their study showed that bubbles and speculative expectations exist in the Swedish property market because of the volatility in housing demand and the fundamental factors. The interest rate was found to be important in explaining the fluctuation of house prices in the long run and short-run. The authors used the impulse response function to capture the time-path of fundamentals and bubbles (Yang & Turner, 2004).

Bjorkland and Sodenberg (1999) found that the ratio of property value to rent increased significantly during the sample period from 1985 to 1994 in the Swedish property market and concluded that speculative bubbles drove property prices in Sweden. Jonung et al. (2006) recorded the boom and burst caused by expansion in credit and rising house prices in Finland and Sweden during 1984 to 1995 period.

The literatures discussed above support the existence of housing bubbles in different parts of the world. Economic fundamentals such as income and interest rates are the most significant factors influencing

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the movement of house prices. In most of the housing markets described above, the housing bubbles started as a boom in the mid 1980s to early 1990s, with the bubble bursting in early 2000.

**4.0 The existence of bubbles in the housing market**

Bubbles in the housing market may be difficult to detect or analyse given the difficulty in determining the fundamental variables causing the variation in the house prices (Flood & Hodrick, 1990). Therefore, researchers in the housing market have established some indicators or signals, which can assist in detecting the possible existence of housing bubbles.

Sanchez (2003) listed several indicators of bubble existence in the housing market. These include a sharp increase and fall in the house prices which cannot be explained by the economic fundamentals, an increase in the purchase of houses for capital gain (speculation) purposes and the excitement of buyers in purchasing a house regardless of the price and their financial condition. According to Case and Schiller (2003), a housing bubble occurs when a house is defined as an investment and not as a house to occupy. Other indicators of bubbles include the amount of housing stock available in the market (Thomsett & Kahr, 2007). Housing stock of six to twelve months should be available to fulfil the demand for houses and any amount exceeding twelve months will cause an 'over-supply' in the housing market (Thomsett & Kahr, 2007).

In addition, a bubble exists when people start to purchase an asset based on expectation of future price increase (Case & Schiller, 2003). The signs of disruptions in real economy and financial sector are a deflationary pressure, which reduces economic output and the emergence of banking crises due to the bursting of housing bubbles (Bordo & Jeanne, 2002). Other signs of a bubble booming in the housing market are liberalized loan conditions, low interest rates, overpriced properties and positive expectations for the future (Bordo & Jeanne, 2002).

According to Bibish IV et al. (2005), an asset becomes a bubble in the presence of three conditions. First, the existence of uncertainty about future returns on the asset. Rising prices are based on people's expectation of economy conditions, which can change overnight. Second, the transaction cost of purchasing or selling the asset decreases (inducing speculative buying). Therefore, more people will be attracted to purchase a house, as the cost is lower. Third, the holding period of the asset becomes shorter than historical norms; this is exceptionally true for speculators who buy a house for capital gain purposes.

**5.0 Conclusion and Future Recommendation**

This paper has describes the evolution of house price bubble based from the theoretical perspectives. The strong growth in house prices in the housing markets of most countries has created concern about the possibility of house price bubbles. This issue is of concern to the public since the purchase of a house is generally the highest economic transaction made by most households. Hence, it is normal for people to have strong reactions to large movements in house prices compared to other goods and services

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(Kenny, 1998). The housing market consists of several sectors, which interact and play significant roles in the overall market development. To obtain comprehensive information about these interactions, further research should extend the research scope by estimating housing supply and mortgage markets. In addition, researchers can also include uncontrollable factors such as natural disasters (i.e. earthquake) and wars, which indirectly affect house prices.

The causes of house price bubbles are distinctive in different housing markets. Some countries encounter frequent bubbles compared to other countries. Future study on this issue should focus on establishing the real causes of house price bubbles in developed, developing and less developed countries. The findings from different types of countries will create a general picture about the contributing factors causing housing price bubbles. Experience has shown that each of the previous house bubble crises impacted on the economy differently depending on the factors (such as macroeconomic or macroeconomic variables) which triggered it. Nevertheless, the literature on asset pricing has shown that the presence of a bubble is difficult to confirm (Flood & Hodrick, 1990). According to Koh et al. (2005), even bubble theories fail to accurately capture the existence of a real estate bubble. In summary, as explained by Kritayanavaj (2008), the impact of a future bursting of housing bubbles will be more severe than in the past if no immediate steps were taken to prevent the impact from spreading to other sectors of the economy. The importance of providing appropriate steps and action plans cannot be underestimated.

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